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PATENT
Docket No. 146712001400

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Samuel D. HARKNESS, IV et al

Serial No.: 09/781,978

Filing Date: February 14, 2001

For: POST-DEPOSITION ANNEALED
RECORDING MEDIA AND METHOD
OF MANUFACTURING THE SAME

Examiner: Bernard D. Pianalto

Group Art Unit: 1762

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SECOND DECLARATION UNDER 37 CFR 1.131

Commissioner for Patents
Washington, D.C. 20231

Sir:

Samuel D. Harkness, IV, declares under penalty of perjury under the laws of the United States of America as follows:

(1) I have received a Ph.D. in Materials Science and Engineering in 1995 from the University of Florida, Gainesville, Florida 32611. I am now a Senior Engineering Manager of Thin Film Technology Group, Advanced Magnetics, Media Technology and Recording Media Operations of Seagate Technology Holdings ("Seagate"), where I entered employment in 1998. My group performs advanced technology development (ATD) in support of future magnetic recording disk products. My groups' efforts can be primarily characterized as thin film sputter development encompassing endeavors in processing, novel materials, and magnetic schematic design. Prior to becoming manager in 1999, I served as a Thin Film Engineer in the same group. My background prior to Seagate includes assignments in thin film deposition equipment

development and implementation at Intevac, and laser deposition of novel transducer materials during a Carnegie Mellon University post-doctoral fellowship.

(2) I am familiar with the subject matter and claims of the present application. I am also familiar with the teachings of U.S. Patents 6,033,491 (Lin) and 6,307,241 (Awschalom) cited by the Examiner in the Action of February 28, 2003.

(3) I reviewed the Examiner's rejection. It seems that the Examiner believes that the Lin in column 6, lines 45-55 and Awschalom in column 4, lines 35-35 teach *in-situ* annealing. The issue now is to clarify to the Examiner that Lin and Awschalom does *not* teach *in-situ* annealing of this invention. *In-situ* annealing is defined on page 4, lines 11-13 of the specification as follows:

“*In situ*” annealing means that the medium was annealed during the manufacturing process without having to remove the medium from a sputtering system to a separate location.

(4) I respectfully submit that the word “*in-situ*” or “annealing” seems to motivate the Examiner to find any such reference that discloses these words in the prior art. In fact, “annealing” merely refers to the practice of heating something in a controlled manner to effect change on the atomic scale. It does not mean “*in-situ* annealing” as defined in the specification.

(5) Awschalom teaches of the creation ferromagnetic semiconductors via ion implantation of submicron sized ferromagnetic particles. The Awschalom process uses a high temperature anneal (> 600°C) to remove crystal damage from ion implantation and to enable incorporation of the particles into the semiconductor matrix. This is a standard semiconductor process that has been around for decades and is in the public domain. Awschalom discloses that contamination is improved when the treatment is carried out *in-situ* but provides no details on

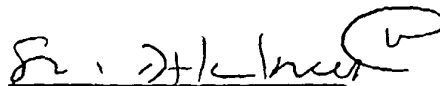
how this could be accomplished given the constraints imposed by media fabrication. Thus Awschalom does not disclose the "in-situ" annealing of the pending application.

(6) Lin teaches annealing to effect improved exchange coupling of NiFe/NiMn exchange bias layers (in a spin valve (SV) recording transducer). Some level of interfacial diffusion is accomplished without perceptible degradation to the above layers in the SV stack. Lin suffers from a similar defect as that of Awschalom in that it provides no details on how this could be accomplished given the constraints imposed by media fabrication. Thus Lin does not disclose the "in-situ" annealing of the pending application.

(7) This invention relates to the utilization of a post-deposition anneal that is engineered to enable grain boundary diffusion of a ultrathin caplayer material to promote decoupling of the intergranular exchange energy field. Thus this invention is totally different from Awschalom and Lin.

(8) In conclusion, I declare that the Awschalom and Lin processes are most certainly *not* done *in-situ* as this term is defined in the specification.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed at Fremont, California, United States of America, on this 9TH day of May 2003.


Samuel D. Harkness, IV